

TABLE OF CONTENTS

Chapter 1: Introduction

| | |
|---|---|
| A Vision of the Future | 1 |
| Introduction | 1 |
| Document Organization | 2 |
| The Presidio's History | 2 |
| Planning Context | 3 |
| Planning Process | 4 |
| Scoping and Public Outreach | 4 |
| Analysis and Alternatives Development | 6 |
| Environmental Consequences | 7 |
| Plan Implementation | 7 |
| Implementation Criteria | 7 |
| Environmental Assessment | 8 |

Chapter 2: Purpose and Need

| | |
|-----------------------|---|
| Project Need | 9 |
| Project Purpose | 9 |
| Goals | 9 |

Chapter 3: Trail Classifications and Design Guidelines

| | |
|---|----|
| User Groups | 13 |
| Trails and Bikeways Classification System | 13 |
| Pedestrian Trails | 15 |
| Multi-Use Trails | 17 |
| Bikeways | 18 |
| Bikeway Design | 19 |
| Accessibility | 20 |
| Best Management Practices | 25 |

Presidio Trails & Bikeways master plan

Chapter 4: Alternatives

| | |
|--|----|
| Alternative Description | 27 |
| No Action Alternative | 27 |
| The Action Alternatives | 27 |
| Changes to Existing Trail Corridors | 31 |
| New Trail Corridors | 39 |
| Overall Trail Network | 43 |
| Comparisons at Key Locations | 61 |
| Environmentally Preferable Alternative | 69 |

Chapter 5: Environmental Consequences

| | |
|---|-----|
| Introduction and Methodology | 71 |
| Geologic Resources | 71 |
| Hydrologic Resources | 73 |
| Biological Resources | 75 |
| Cultural Resources | 82 |
| Traffic Safety | 84 |
| Visitor Use | 88 |
| Visual Resources | 90 |
| Air Quality | 93 |
| Noise | 94 |
| Cumulative Impacts | 95 |
| Impact Topics Dismissed from Further Analysis (No Impact) | 101 |

Chapter 6: Consultation and References

| | |
|--|-----|
| Interagency Review | 103 |
| List of Persons and Agencies Consulted | 104 |
| List of Preparers | 105 |
| References | 105 |

Appendices

| | |
|---|-----|
| Appendix A: Summary of Public Comment | A-1 |
| Appendix B: Best Management Practices | B-1 |
| Appendix C: Cumulative Project List | C-1 |

Figures

| | |
|---|----|
| 1-1. Regional Map | 3 |
| 1-2. The Presidio of San Francisco | 5 |
| 3-1. Pedestrian Trail | 15 |
| 3-2. Pedestrian Trail Detail | 15 |
| 3-3. Multi-use Trail | 16 |
| 3-4. Typical Bike Lanes on Roadway | 18 |
| 3-5. Uphill Bike Lane | 19 |
| 3-6. Shared Roadway | 19 |
| 3-7. Beach Access Route (plastic mat option) | 22 |
| 3-8. Primary Trailhead | 23 |
| 3-9. Secondary Trailhead | 24 |
| 3-10. Existing Trail Marker, Bay Area Ridge Trail | 24 |
| 4-1A. Alternative A: No Action | 47 |
| 4-1B. Alternative A: On-road Bicycle Routes | 49 |
| 4-2A. Alternative B: Mixed-Use | 51 |
| 4-2B. Alternative B and C: On-road Bicycle Paths | 53 |
| 4-3. Alternative C: Shared Use | 55 |
| 4-4A. Alternative D: Dispersed/Single Use | 57 |
| 4-4B. Alternative D: On-road Bicycle Routes | 59 |
| 4-5. Existing Lincoln Boulevard at Pershing Drive North | 61 |
| 4-6. Proposed Lincoln Boulevard at Pershing Drive North | 61 |
| 4-7. Existing Lincoln Boulevard at Kobbé Avenue | 62 |
| 4-8. Proposed Lincoln Boulevard at Kobbé Avenue | 62 |
| 4-9. Existing Lincoln Boulevard at Washington Boulevard | 63 |

Presidio Trails & Bikeways master plan

| | |
|--|-----|
| 4-10. Proposed Lincoln Boulevard at Washington Boulevard | 63 |
| 4-11. Existing Lincoln Boulevard at Crissy Field Avenue | 64 |
| 4-12. Proposed Lincoln Boulevard at Crissy Field Avenue | 64 |
| 4-13. Existing Golden Gate Promenade at Fort Point Extension | 65 |
| 4-14. Proposed Golden Gate Promenade at Fort Point Extension | 65 |
| 4-15. Existing Ecology Trail Corridor at Arguello Boulevard | 66 |
| 4-16. Proposed Ecology Trail Corridor at Arguello Boulevard | 66 |
| 4-17. Existing Bay Area Ridge Trail Corridor at Washington Boulevard | 67 |
| 4-18. Proposed Bay Area Ridge Trail Corridor at Washington Boulevard | 67 |
| 4-19. Existing Juan Bautista de Anza at Battery Caulfield Road | 68 |
| 4-20. Proposed Juan Bautista de Anza at Battery Caulfield Road | 68 |
| | |
| B-1. Typical Location: Existing Drainage Control | B-1 |
| B-2. Outsloping (BMP 1-1) | B-1 |
| B-3. Rolling Grade Dip (BMP 1-2) | B-2 |
| B-4. Surface Reinforcing (BMP 2-1) | B-2 |
| B-5. Boardwalk Bridge (BMP 2-2) | B-3 |
| B-6. Drainage Lens (BMP 2-3) | B-3 |
| B-7. Typical Location: Steep Slopes | B-3 |
| B-8. Retaining Wall (BMP 3-2) | B-4 |
| B-9. Trail Structure (BMP 3-3) | B-5 |
| B-10. Above Grade Trail (BMP 4-1) | B-5 |
| B-11. Typical Location: Eroding and Hazardous Trail Edges | B-5 |
| B-12. Edge Protection (BMP 5-1) | B-6 |
| B-13. Trail in Sandy Soil | B-7 |
| B-14. Subsurface Geogrid (BMP 6-1) | B-7 |
| B-15. Moveable Textured Panel (BMP 6-2) | B-7 |

| | |
|---|------|
| B-16. Sand Ladder (BMP 6-2) | B-8 |
| B-17A. Trail Damaged by Vehicle Use | B-8 |
| B-17B. Reinforced Trail Base (BMP 7-1) | B-8 |
| B-18. Typical Location: Bicycle/Auto Conflict on Washington Boulevard | B-9 |
| B-19. Social Trail Through Forest | B-10 |
| B-20. Vegetation Restoration (BMP 9-2) | B-11 |
| B-21. Lobos Creek Boardwalk | B-12 |
| B-22. Non-ferrous Boardwalk (BMP 10-2) | B-12 |

Tables

| | |
|---|-----|
| 3-1. Trails and Bikeways Classification | 14 |
| 4-1. Trails and Bikeways by Alternative | 43 |
| 5-1.Changes to Trail Surfaces | 74 |
| B-1 Backslope Cut Ratios | B-4 |

LIST OF ACRONYMS

| | |
|--------------|--|
| AASHTO | American Association of State Highway Transportation Officials |
| ADAAG | ADA Accessibility Guidelines |
| BAAQMD | Bay Area Air Quality District |
| BART | Bay Area Rapid Transit |
| BMPs | Best Management Practices |
| CalTrans | California Department of Transportation |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act of the United States |
| EAs | Environmental Assessments |
| EIS | Environmental Impact Statement |
| FEMA | Federal Emergency Management Agency |
| GGNRA | Golden Gate National Recreation Area |
| GIS | Geographic Information System |
| GMPA | General Management Plan Amendment |
| NEPA | National Environmental Policy Act |
| NHL | National Historic Landmark |
| NHPA | National Historic Preservation Act |
| NPS | National Park Service |
| PA | Programmatic Agreement |
| PM10 | particulate matter less than 10 microns in diameter |
| Presidio VMP | Presidio's Vegetation Management Plan |
| PTMP | Presidio Trust Management Plan |
| SHPO | State Historic Preservation Officer |
| Trust | Presidio Trust |
| USFWS | U.S. Fish and Wildlife Service |



1 Introduction

1 Introduction 2 Purpose & Need 3 Trail Classifications & Design Guidelines 4 Alternatives 5 Environmental Consequences 6 Consultation and References 7 Appendices



The Golden Gate Bridge from the Presidio

A Vision of the Future

The year is 2022, and as a beautiful summer day slides into evening, a group of people stop to enjoy a Pacific sunset at one of the Presidio's overlooks atop the coastal bluffs. The admirers include tourists, runners, a family out for a bicycle ride, a wheelchair athlete taking a break from her training, and a Presidio resident out for an evening stroll. All of them traveled to the overlook along the Presidio's well-maintained and interconnected network of pedestrian and multi-use trails and bikeways. The ability to meet the needs of these diverse park users, including Presidio residents, park neighbors and visitors, is the result of the successful implementation of the Presidio Trails and Bikeways Master Plan.

This idyllic scene had its start in 1999, when work began on a plan to develop an interconnected, safe and enjoyable pedestrian and bicycle network that provides access to the Presidio's unique natural, cultural, and historic resources. This vision for a future trails and bikeways system in the Presidio was developed based on public and agency involvement and includes:

- Logical, comprehensive, user friendly connections;

- A network of trails that provides a variety of trail experiences to meet user needs;
- Access and challenge for different ages, skills, and physical abilities;
- Preservation of the valuable natural and cultural resources that make the Presidio an outstanding national resource;
- A system that is part of a comprehensive transportation strategy that supports and encourages the use of alternative transportation and reduces dependence on cars;
- Coordination with regional and national trails, and local bicycle routes;
- An environmentally responsible system that fully incorporates the best in sustainable design and construction practices; and
- Ongoing public involvement in educational and stewardship programs.

Introduction

The Presidio Trails and Bikeways Master Plan will provide park visitors, neighbors, and Presidio residents with an interconnected, safe and enjoyable trails and bikeways system while protecting and managing the Presidio's natural

Presidio Trails & Bikeways master plan

and cultural resources. The plan is a joint effort of the National Park Service (NPS) and the Presidio Trust (Trust), the two agencies responsible for the management of the area. It will guide management of Presidio trails and bikeways for the next 20 years.

The Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA) allow federal agencies to prepare Environmental Assessments (EAs) on any action (when no Environmental Impact Statement is necessary) in order to assist agency planning and decision making (40 C.F.R. 1501.3). The Presidio Trails and Bikeways Master Plan includes an integrated EA, which evaluates the potential environmental effects of four trails and bikeways alternatives.

Document Organization

This chapter provides project background, including document organization, Presidio history, planning context, planning process, scoping and public outreach, and an overview of the methodology used to develop the alternatives presented in this plan. It also presents the scope of the plan's EA component and a preliminary implementation plan.

Chapter 2 describes the project's purpose, needs, goals and objectives.

Chapter 3 describes the Presidio's trails and bikeways classification system and design guidelines. The chapter also summarizes the Best Management Practices (BMPs) that would be incorporated in all project alternatives.

Chapter 4 summarizes proposed trail modifications by trail corridor, and reviews the four alternative trails and bikeways concepts developed for the Presidio.

Chapter 5 analyzes the environmental impacts of the alternatives, as well as cumulative impacts.

Chapter 6 provides reference and consultation information.

Chapter 7, Appendices, includes a summary of public comments, Best Management Practices (BMPs), natural resource conservation measures, and a cumulative project list.

The Presidio's History

The Presidio of San Francisco is part of the Golden Gate National Recreation Area (GGNRA). It is also a National Historic Landmark District, the highest level of federal historic designation.

The park spans 1,491 acres from the Pacific Ocean to the San Francisco Bay on the northern tip of San Francisco. The Presidio includes nearly 500 historic buildings and structures, a collection of coastal defense fortifications, a national cemetery, a historic airfield, a saltwater marsh, forests, beaches, native plant habitats with federally listed species under the Endangered Species Act, coastal bluffs, miles of hiking and biking trails, and some of the most spectacular vistas in the world. Figure 1-1 illustrates the Presidio's regional context.

The Presidio has been shaped by many influences, from the Ohlone people who lived, gathered and collected shellfish here, to the armies of Spain and Mexico. The Spanish established the Presidio as a military post more



The Historic Cemetery

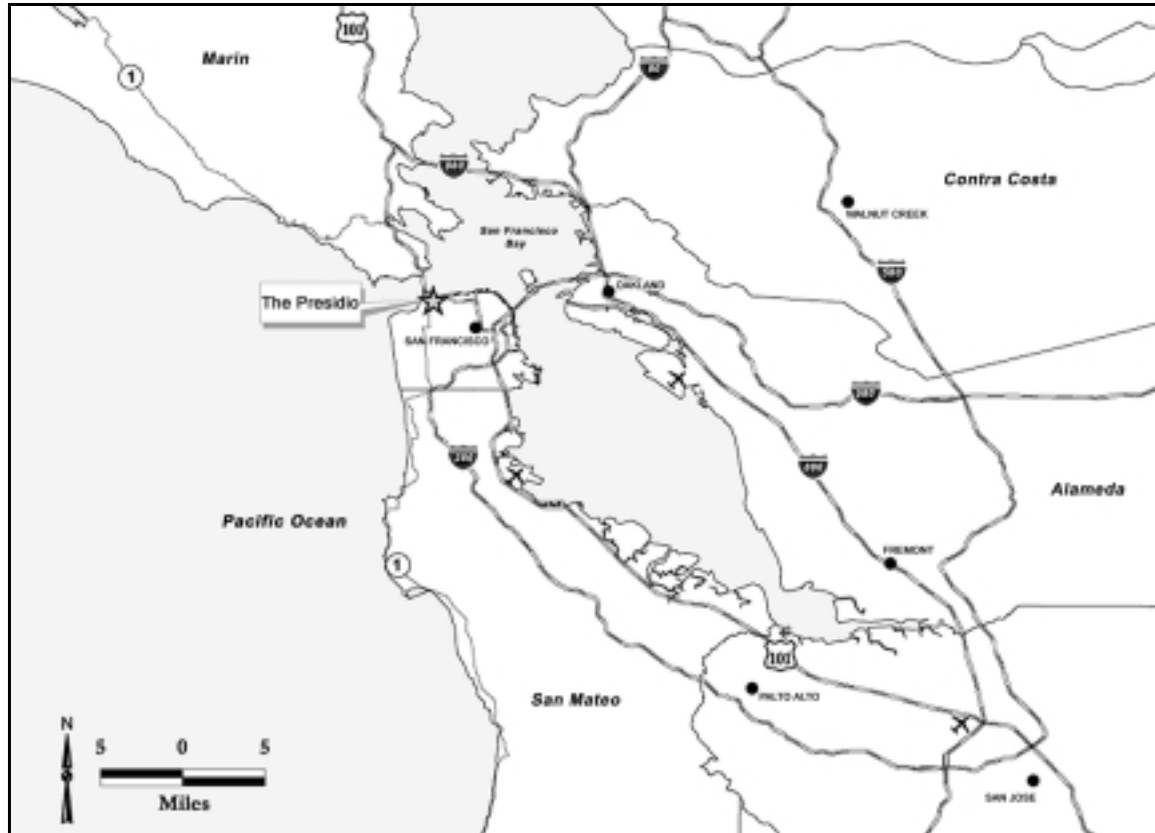


Figure 1-1. *Regional Map*

than 200 years ago in 1776, when Juan Bautista de Anza explored the peninsula and claimed the land for the king of Spain. When Mexico gained its independence from Spain in 1821, Mexican troops occupied the Presidio.

In 1848, the U.S. Army took over the area and remained in control of the Presidio until 1994. The military base was then closed and the

Presidio transferred to the National Park Service to become part of the Golden Gate National Recreation Area. Up to that time, the Presidio was the oldest continuously operated military post in the nation.

As part of the transition, the NPS completed and adopted a comprehensive land use plan called the General Management Plan Amendment

(GMPA) in 1994 (NPS 1994). The GMPA defined the direction for resource preservation and visitor use in the Presidio, and proposed that a comprehensive trails and bikeways plan be created.

In 1996, Congress passed the Presidio Trust Act. The Act created the Presidio Trust, and gave it jurisdiction over the park's non-coastal areas (Area B) – about 80% of the Presidio land – while the NPS retained jurisdiction over the coastal areas (Area A). Areas A and B are shown in Figure 1-2.

The Act included a mandate that the Trust achieve financial self-sufficiency by 2013. On July 1, 1998, the Trust assumed administrative jurisdiction over Area B; and in August 2002 the Trust adopted an updated management plan for Area B, the Presidio Trust Management Plan (PTMP).

Planning Context

The Presidio Trails and Bikeways Master Plan is coordinated and consistent with Presidio and regional plans.

- The General Management Plan Amendment is the comprehensive land use plan for Area A of the Presidio. It defines the direction for resource preservation and visitor use, with a

Presidio Trails & Bikeways master plan

key goal of increasing pedestrian and bicycle use. It proposes a trail circulation plan to improve bicycle and pedestrian safety, resource protection, user access, visitor amenities, and trail connections.

- The *Presidio Trust Management Plan* (PTMP) is the Trust's comprehensive land use plan for Area B of the Presidio, and defines objectives for resource preservation and enhancement, and public access. The PTMP calls for a comprehensive bicycle and pedestrian network, and includes policies regarding transportation demand management, public use, and accessibility.
- The Presidio's Vegetation Management Plan (Presidio VMP) was prepared jointly by the NPS and Trust and completed in 2001. It describes restoration and maintenance goals for three landscape zones: 1) natural, native plant zones; 2) cultural, planted or ornamental landscape zones; and, 3) planted, historic forest zones. All the proposed trails and bikeways improvements are consistent with the VMP.

The Presidio Trails and Bikeways Master Plan also considers other relevant regional trails and bikeways plans to enhance connections to and

through the Presidio. Plans considered include the San Francisco Bicycle Plan, the San Francisco Bay Trail Plan (the San Francisco Bay Plan), the Juan Bautista de Anza National Historic Trail Plan, and Bay Area Ridge Trail planning documents.

Planning Process

A multi-disciplinary core planning team consisting of NPS and Trust staff guided the planning process. The team consisted of experienced park planners and staff with expertise in natural and cultural resources, facilities management, interpretation, visitor protection, and transportation. The planning process is described in the paragraphs that follow and included:

- Scoping and public outreach;
- Review of existing conditions;
- Field analysis of site conditions;
- Analysis of opportunities and constraints;
- Development of a range of alternatives;
- Description of the probable environmental impacts of the alternatives; and
- Preparation of a draft plan;

The next steps are:

- Formal public review;
- Revisions; and
- Final plan adoption.

Scoping and Public Outreach

The NEPA encourages an early and open process for determining the scope of issues to be addressed in environmental documentation, and for identifying the significant issues related to a proposed action (40 CFR 1501.7). The team conducted both internal and public scoping activities.

Internal scoping activities, including a Trust and NPS planning meeting in April 2001, offered an opportunity for stakeholder agencies to provide input to integrate all necessary tasks, consultation, and products into the planning process. In addition, the planning team involved the City of San Francisco, Marin County, the Association of Bay Area Governments, and the Golden Gate Bridge District in scoping and public involvement activities.

The public was involved in identifying issues and developing goals and objectives through a public scoping process that included a general public



Figure 1-2. *The Presidio of San Francisco*

Presidio Trails & Bikeways master plan



The Golden Gate Bridge from the Presidio

meeting, a series of focus group meetings, a design concept workshop, a survey of park users, and various opportunities for written comment. (Survey results and public comments are summarized in Appendix A.)

A Trust-sponsored Public Update Meeting on Trust transportation planning initiatives was held in October 1999, introducing the Trails and Bikeways Master Plan planning process.

A Public Scoping Meeting in December 1999 provided an opportunity for the public to formally review and provide input on the proposed project. The meeting incorporated large and small group discussions, as well as opportunities to submit written comments. Nearly 60 people attended the meeting.

Next, the NPS and Presidio Trust hosted five separate *Focus Group Sessions* in February 2000 to gather input and feedback from major park user groups. The focus group sessions included:

- 1) Presidio Tenants and Residents,
- 2) Resource Conservation Groups,
- 3) Neighborhood Coalitions, Regional Groups and Government Agencies,
- 4) Wheeled Sports Groups,
- 5) Trail Users.

In June 2000, a Design Concept Public Workshop was held to offer the public an opportunity to review and provide input on the conceptual trails and bikeways circulation plan. About 45 people attended the workshop.

To confirm the preliminary trail alignments and connections, the team conducted a User Survey for two days in July 2000. The survey gathered user data on current trail and bicycle use patterns, desired connections, and destinations using intercept and mail-in surveys. A total of 757 surveys were collected.

Additional and ongoing public involvement opportunities will be provided in future planning efforts that require major trail construction and through a NPS and Trust Trail Stewardship Program.

Analysis and Alternatives Development

Consultants and staff carried out extensive on-site evaluation of the existing trail system, identifying physical and structural problems, use patterns, safety concerns, and trail destination and connection opportunities. The team evaluated Presidio resources to determine constraints to potential trail alignments, and opportunities to correct existing problems and

create new recreation, commuter routes or interpretive experiences. This analysis reviewed trail corridors relative to geologic and hydrologic factors, biological resources, traffic safety, and cultural and scenic resources.

The analysis was mapped on a GIS trail database so that trail alignments could be adjusted accordingly. If the resource analysis mapping indicated potential conflicts between resource protection and desired trail alignments, the team conducted field checks to verify conditions and determine an appropriate course of action.

Based on this analysis, the team developed four trails and bikeways alternatives for analysis in the EA. One alternative is to take no action, which assumes that no comprehensive changes or major new trail building activities would take place. The other three are “action” alternatives, which present a range of trail types to test.

Environmental Consequences

In the context of an EA, the NEPA requires that federal agencies evaluate the proposed federal action to determine whether it would result in significant effects on the human environment. Chapter 5 analyzes the environmental impacts of the four Presidio Trails and Bikeways Master Plan alternatives on geology, hydrology, biological



Public Scoping Meeting, December 1999

resources, cultural resources, traffic safety, visitor use, visual resources, air quality and noise. This analysis provides the basis for comparing the beneficial and adverse effects of the alternatives, and includes an assessment of cumulative effects and impairment to park resources or values. The effects on floodplains and environmental justice are also briefly addressed.

Plan Implementation

The Presidio Trust and the NPS will develop specific site plans for individual trails and bikeways as they implement the management actions recommended in the Presidio Trails and Bikeways Master Plan. Site-specific planning will address precise trail configurations and locations, trail width, surface, signs, trailheads, slopes, drainage and other physical attributes. These improvements will be developed within the

context of the broader vision, and best management practices identified in this plan. Additional compliance will be conducted as necessary.

Implementation Criteria

Individual trails and bikeways improvement projects will be implemented based on priority, phasing and funding. The Trust and NPS developed the following criteria for determining an implementation schedule:

- 1) Trails and intersections with safety concerns;
- 2) Trails and intersections with personal security concerns;
- 3) Trails currently causing natural resource and/or cultural resource damage;
- 4) Trails with accessibility concerns;
- 5) High use and highly desired trails;
- 6) Trails where other construction activity is occurring (i.e. areas such as Letterman);
- 7) Trail segments that complete corridor connections; and
- 8) Trails that provide an outside funding or matching fund opportunity.

Presidio Trails & Bikeways master plan

Environmental Assessment

While the NPS and Trust have separate jurisdictional responsibilities in the Presidio and separate authority to approve, veto, or finance all or part of the Presidio Trails and Bikeways Master Plan (jurisdiction by law), the agencies collaborated in the preparation of this document to comply with the NEPA. According to the CEQ NEPA Regulations, an EA is a concise public document prepared by federal agencies when a proposed action is not covered by a categorical exclusion or otherwise exempt from the NEPA. Both the NPS and the Trust prepare EAs when they have insufficient information with which to determine whether a proposed action has the potential to cause significant environmental effects. The purposes of an EA are to provide evidence and analysis to determine whether an EIS is required, aid a federal agency's compliance with the NEPA when no EIS is necessary, and facilitate preparation of an EIS when one is necessary (40 CFR 1508.9(a)).

Chapter 2 of the Presidio Trails and Bikeways Master Plan contains a brief discussion of the need for the plan. Chapter 3 describes trail classifications and design guidelines. Chapter 4 identifies alternatives to the proposed action. The environmental impacts of the proposed

action and alternatives are described in Chapter 5, and a list of agencies and persons consulted are provided in Chapter 6. Together, these chapters satisfy the required contents of an EA.

Both the NPS and Trust will use the EA to assist in their respective planning and decision-making. The Presidio Trails and Bikeways Master Plan/Environmental Assessment is a programmatic plan and EA. Proposed trail routes and designs have not been finalized in every instance, and some connections or routes may be subject to further planning and environmental review prior to implementation consistent with the provisions of the NEPA.



Army Museum